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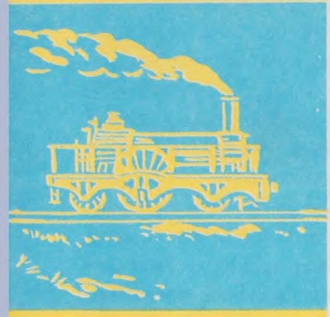

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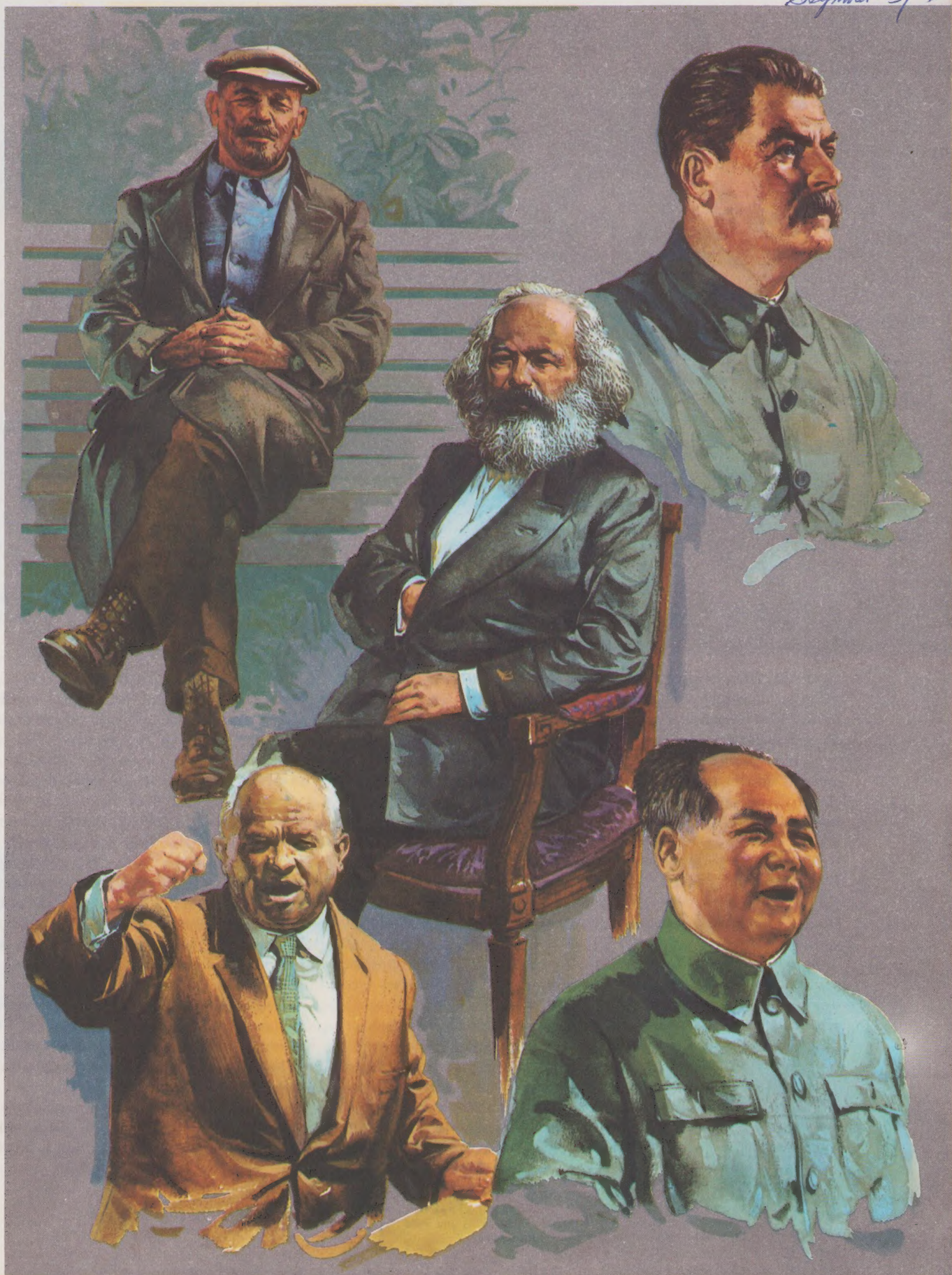

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COMMUNISM

November 1917; Bolshevik forces grab control in Russia

A SPECTRE haunts Europe; the spectre of Communism. All the powers of old Europe have entered into a holy alliance to lay this spectre: Pope and Tsar, Metternich and Guizot, French radicals and German police.'

It is with these dramatic words that the most remarkable and influential propaganda work ever written begins. And it closes with the stirring call: 'Workers of the world unite. You have nothing to lose but your chains. You have a world to win.'

This work was the *Communist Manifesto*, written jointly by Karl Marx and Frederick Engels in 1848 as a policy statement for the Communist League founded the previous year. Since then it has become, together with other works of Marx, the bible of Communism.

In one way Communism existed before Marx. But in another way it did not. The basic creed of the Communists, that everyone should be equal, is indeed very old. The first Christians who shared their possessions in common in the days which followed the death of Christ were communists. So were the 'Diggers' who tilled their common land in the days of Oliver Cromwell. But until Marx there was little difference between the words 'communism' and 'socialism'. Both ideologies wanted to reconstruct society for the benefit of the poorer classes at the expense of the richer. What Marx did was to transform this vague idealism into a political programme. He told his followers exactly what they should want and exactly what they should do to get it. And he did something still more important – he 'proved', in his analysis of history and society, that what he meant by Communism was not only good but inevitable.

Communism today is basically either what Marx thought or what Communists interpret him as having thought. What then were these ideas which caused not only a world revolution but world-wide tension and fear?

The philosophy of Marx

Marx was influenced by several earlier writers including the German philosopher Hegel. It was from Hegel that Marx got his vital theory of the *dialectic*. This is one of the most complicated ideas in philosophy, but its importance is that for those who believe it, it holds the key to everything. Hegel's use of the word 'dialectic' was as follows: everything we see about us is constantly changing; and it changes according to a set pattern. This set pattern is a threefold process involving a central *thesis* (like, say, the family), the opposite or *antithesis* (like civil society which is the opposite of the family because the duties of citizenship make demands which often conflict with those of family ties), and the final *synthesis* in which the two are fused together (like the state, in which, according to Hegel, both loyalties are superseded in a higher and more satisfying loyalty).

According to Hegel the only things that matter are ideas – in fact the family as such does not exist apart from man's thoughts of it. His theory is thus called *Idealism*.

Now Marx took this threefold dialectical process and in his own words 'stood it on its feet'. He claimed that ideas are controlled by *material* things and in particular by the economic materials of a given society or civilisation. Thus while Hegel might have said that in a Stone Age society you must think of a tool before

Previous page: *In the centre*, Karl Marx (1818–1883) whose doctrine changed the world; *above, left*, Lenin (1870–1924) who brought Communism to Russia, and Stalin (1879–1953), whose rule was one of terror and achievement; *below, left*, Krushchev (b. 1894) and Mao Tse-tung (b. 1893), world leaders of Communism today.

Towards the end of the 8th century B C the Scythian nomads, coming from northern Asia, invaded vast areas of western Asia and southern Europe, reaching as far as the Egyptian border. On the left is a Scythian hunter; notice the magnificent reindeer head-dress of copper, leather, and felt that his horse is wearing

THE SCYTHIANS

THE Scythians were early inhabitants of south Russia; they were a nomadic people, constantly on the move in search of new pasture for their herds. They left no towns, no roads, and no great monuments behind them; they did not even develop a system of writing. For this reason they are among the most elusive of all ancient peoples. But as far as we can tell they seem also to have been one of the most colourful.

The great Greek historian Herodotus is our chief authority on the Scythians, but even he is confused. He sometimes treats them as a small nomadic group of true or 'royal' Scythians; but he is also apt to describe as 'Scythian' almost any barbarian living to the north and north-east of the Black Sea. Most probably the Scythians were a ruling tribe who gave their name to the wide variety of peoples who became their subjects.

Herodotus suggests two origins for the Scythians. His first idea is that they were native to south-western Asia; but in this he is confusing them with the pre-Scythic Iranian tribes who eventually, once the Scythians had arrived there, came under their domination. Where then did the Scythians come from? Herodotus's other idea is that they came out of upper Asia, crossing the Volga in about 700 B C, and then coming into conflict with the Cimmerians, a people in control of south Russia. This seems to be the answer.

As the Scythians became more established in their new land, powerful rulers emerged and in the next century or so we find mentions of them in Assyrian records. These were the last days of the great Assyrian empire (see page 2241), with which the Scythians seem to have been on good terms. There is a story that the Scythians ruled Media for 28 years, penetrating as far south as the borders of Egypt. But it is difficult to fit these 28 years into what we know of Assyrian history. Nevertheless it is likely that if they did not actually rule Media a great many Scythians at any rate lived there.

In 512 B C Darius of Persia invaded Scythian territory but was apparently repulsed. But at about this time the Scythians retired to south Russia, and made their home there, based on the Crimea. From here they seem to have penetrated into eastern Europe; traces of them have been found in Poland, Hungary, Romania, and Bulgaria.

But the Scythians were not moving westwards voluntarily; they were under pressure from a new wave of tribes coming from the east. The most formidable of these were the Sarmatians who, by the end of the 2nd century B C, had confined them to the Crimea. Here, Scilurus, the last great Scythian ruler, built a capital at Neapolis. But the Scythians were no longer powerful; they began to split up into a multitude of petty states and these were finally overwhelmed by the Huns in the 5th century A D.

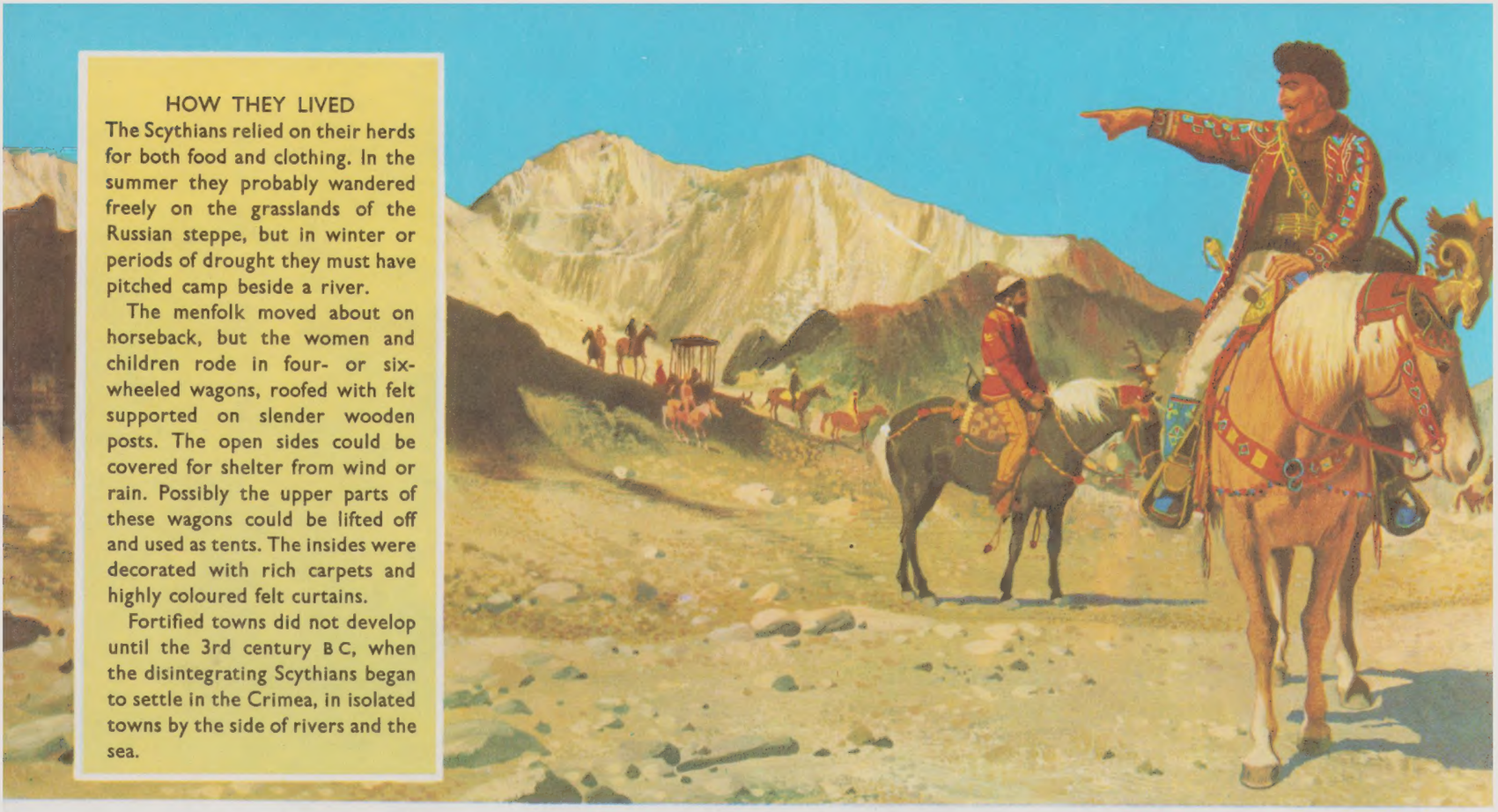
Electrum (alloy of gold and silver) vase found in the Crimea (4th to 3rd century B C)

HOW THEY LIVED

The Scythians relied on their herds for both food and clothing. In the summer they probably wandered freely on the grasslands of the Russian steppe, but in winter or periods of drought they must have pitched camp beside a river.

The menfolk moved about on horseback, but the women and children rode in four- or six-wheeled wagons, roofed with felt supported on slender wooden posts. The open sides could be covered for shelter from wind or rain. Possibly the upper parts of these wagons could be lifted off and used as tents. The insides were decorated with rich carpets and highly coloured felt curtains.

Fortified towns did not develop until the 3rd century B C, when the disintegrating Scythians began to settle in the Crimea, in isolated towns by the side of rivers and the sea.



GREAT HORSEMEN

The top of a bronze pole in the shape of a mule's head (7th to 6th century B C). From Kelermes in the Kuban

The Scythians may once have ridden reindeer, but by the time we know much about them they were riding horses, and they may indeed have been the first nomadic people to do so. Other people had used horses for pulling heavy loads, but the Scythians hunted and fought on them, while oxen pulled their wagons. Their horses' trappings were often very elaborate, like the reindeer head-dress in the picture on page 2417. The men had swords and lances, but their main weapons were bows and arrows.

WHAT WERE THEY LIKE?

Herodotus tells us that the Scythians were fat, lazy, degenerate, and good-humoured. From mummified remains found frozen at Pazirik in central Russia we know that some of their chiefs were 5 feet 8 inches tall and their women about 5 feet 1 inch. Most of the men seem to have worn beards – one beardless chieftain had a false beard placed in his grave. The women treated their skins with a paste made from ground-up cypress- and cedar-wood pulp and frankincense. Like the Mongols of today, the Scythians drank great quantities of fermented mares' milk, known as *kumis*. They herded cattle and sometimes grew wheat, but above all they hunted deer, wild boar, beavers, otters, wild sheep and goats, and any other wild animals that came their way.

Cut-out leather stags used for appliqué decoration of clothes, found in a barrow at Pazirik

How they dressed

Most of what we know about the rich and colourful Scythian clothes comes from objects found in graves. Some graves contained vases decorated with human figures; one at Pazirik was found to contain woollen tunics and leather jerkins decorated with bright appliqué (cut out and stuck on) designs and lined with sable; heavily decorated white stockings and overboots; and round fur caps. The women's clothes were even more ornate; almost everything was decorated with appliqué designs and fur, including dresses, cloaks, caps, belts, and bags.

Cut-out ram and lion heads, and cocks for appliqué work (5th century B C)

Religion

According to Herodotus the wandering Scythians were nature worshippers. The air, the earth, the sun, and the moon were their gods. Most revered of all was Tabita-Vesta, the Goddess of Fire.

As they were nomads the Scythians built no permanent temples or altars. Instead they devoted all their attention to the tombs of their dead. The Scythians believed that a man should take with him into the next world all that he had needed and enjoyed in this world. When a Scythian king died, therefore, his body was embalmed and laid in a great square pit, and many of his royal household – his wife, grooms, and so on – were strangled and buried with him. Treasures too were heaped into the grave; but most surprising of all, the king's horses had to die as well; not only the old ones but even his best steeds joined him.

Then his followers built a high mound over the tomb. After a year had passed, 50 more horses with 50 servants were killed and stuffed. The servants were put on the horses' backs, and placed all round the tomb. Both the horses and servants had to serve their master as faithfully in death as they had done in life.

Rich men and kings were buried in this way, and indeed the importance of a dead man can be gauged from the number of horses and treasures in his grave.

Trade

The Scythians grew large quantities of corn, much of which they sold to the Greeks, together with furs, meat, fish, honey, and salt. In exchange Greek artists provided them with pottery, jewellery, and metal work of outstanding quality. The Scythians used no money, so must have bartered their goods.

A cross-section of the Scythian royal tomb at Kostromskaya, which shows how the Scythians tried to leave this world adequately equipped for the next. The dead man was buried in the underground chamber. Skeletons were found of 13 sacrificed servants above him and 22 sacrificed horses outside the burial chamber

ART

The Scythians loved decoration. Saddles, carpets, mirrors, shields, and indeed anything that could be, were adorned with patterns in gold, silver, bronze, felt, or leather. Animals were the Scythians' most important possessions and so, not surprisingly, deer, bears, and birds, compactly yet realistically represented, were their main subjects.

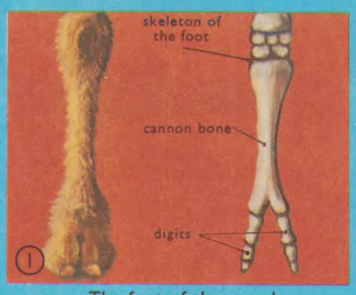
① *Part of a gold buckle showing a horse attacked by a lion.*
② *A gold stag from Kostromskaya in Russia (7th to 6th century B C).*
③ *A gold stag from Zoldhalompuszta in Hungary (5th to 4th century B C).*

THE CAMEL

THE camel is a domesticated animal – indeed it hardly exists at all in the wild state. It cannot, however, be called a 'friend of man', the term by which the horse and dog so well deserve to be known. Camels are not friendly; they are bad-tempered, stubborn, and dangerous, and make no pretence of loving their masters. On the other hand the description 'ship of the desert' suits the camel very well. It can carry a heavy load for great distances and in circumstances in which a horse or a mule would die of hunger and thirst. To men who live in and around deserts the camel has always been, if not their friend, their invaluable ally.

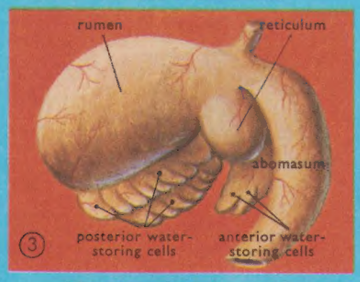
ANATOMICAL FEATURES OF THE CAMEL

The camel is included among the even-toed hoofed mammals (Order Artiodactyla). Many of its characteristics, however, show special adaptation for life in desert country.



The foot of the camel

The head of the camel



The stomach of the camel

The humps of the camel

① The feet consist of two toes, just as do those of an ox. Each toe has a large, flat nail, and behind the nails is a broad pad of leathery skin which enables the camel to walk equally well on slippery rock or soft, yielding sand.

② The camel's muzzle is rather long and projecting, with slit-like nostrils which the animal can close at will, and it has very long eyelashes. Both these features are adaptations for protection against blowing sand.

③ The stomach is divided into compartments like that of the ruminants (see page 1670), but there are only three of them: the rumen, reticulum, and abomasum; the psalterium, characteristic of true ruminants like sheep and oxen, is lacking in camels. In the walls of the rumen there are tube-like extensions in which water is stored. This is one of the adaptations which enable the camel to go for several days in the dry heat of the desert without drinking.

④ The hump (or humps – one in the Arabian, two in the Bactrian camel) is perhaps the camel's most characteristic feature. It consists of an accumulation of fat which can be drawn upon as a reserve of energy when food is scarce. When a camel has starved for some time the hump shrinks, grows limp, and flops over to one side; but a period of rest, with plenty of food and water, soon restores it. When fat is broken down to provide energy it is combined with oxygen to form carbon dioxide and water. The camel absorbs this water, so that the hump is really a store of water as well as of energy.

Among the nomadic people of central Asia the Bactrian

Two kinds of camel

We have spoken so far of 'the camel' although there are, in fact, two distinct species. However, they are so alike that all we have said applies equally well to both of them.

The one-humped or Arabian camel (*Camelus dromedarius*) inhabits the desert country of North Africa and Arabia, and has been introduced, as a domestic animal, to India and Australia. The Arabian camel does not exist as a true wild animal, though there are so-called 'feral' camels that have escaped from domestication and run wild. 'Dromedary' is simply a name for an Arabian camel bred and trained for riding.

The two-humped or Bactrian camel (*Camelus bactrianus*) is a more heavily built beast, which inhabits Asia north of

CLASSIFICATION

Species:	*dromedarius* and *bactrianus*
Genus:	*Camelus*
Family:	Camelidae
Suborder:	Tylopoda
Order:	Artiodactyla
Class:	Mammalia
Subphylum:	Vertebrata
Phylum:	Chordata

RELATIVES AND ANCESTORS

Camels are classified in the Suborder Tylopoda of the Order Artiodactyla or even-toed hoofed mammals. The only other living members of this suborder are the two species of llama, the domesticated vicuna and the guanaco. Strictly, llama is the name of one of the forms of the guanaco, the other being the alpaca. These animals are completely confined to the mountainous parts of South America, being found mostly in Peru and Bolivia. It is strange that the closely related camels and llamas should inhabit such widely separated parts of the earth when no animals of the same type are found in the intervening regions. Geology gives us the answer to the puzzle.

During the later part of the Tertiary Era, Asia and North America were joined and animals could pass freely between these two continents and on to South America, which was more broadly connected to North America than it is today. In those times there was a great variety of tylopods or camel-like animals distributed over the whole area. This is clearly shown by their fossil remains. For some reason they failed to maintain themselves and almost all of them became extinct. The camels and llamas are just isolated remnants of a formerly diverse and abundant group of animals.

camel is an important means of transport; it can withstand intense cold as well as great heat

the Himalayas; it is an important beast of burden in southern Siberia and Mongolia. In the Gobi Desert there are Bactrian camels running free, which are believed to be of true wild stock. This species has a thick coat of hair which it sheds at the end of the winter.

Both kinds have been domesticated from early historical times. They are used for various purposes, including riding and even ploughing, but it is as a pack animal that the camel is supreme. An Arabian camel can carry a load of 500 pounds 25 miles a day for three days without drinking, and the strength and endurance of the Bactrian camel is at least as great. In addition the wool and hide are of value and the flesh and milk can be used for human consumption.

How they live

Camels can thrive on a very meagre diet of dry, prickly plants; just the kind of vegetation, in fact, that grows in the deserts they inhabit. They require a lot of salt in their food and flourish best on the type of plants known as halophytes, which grow in salty soil. Although they can go for long periods without water, they need large quantities of it; a thirsty camel can drink over 20 gallons of water at a time.

The gait of a camel is different from that of most other mammals, being of the type known as pacing, in which the fore and hind legs of the right side are moved forward together, and then both legs of the left side. Giraffes also run in this way and horses can be trained to do so. In camels it results in a sort of swinging motion, and people not accustomed to riding them may suffer from a sort of seasickness on a long journey.

Camels have a remarkable ability to endure heat and cold, and to adjust themselves to the varying conditions. This is specially true of the Bactrian camel, which has to withstand the bitter winters and hot, dry summers of central Asia. To assist it in doing so it grows a thick winter coat of wool, which is shed in summer.

Camels are born one at a time. If one arrives when a company of camels and men are on the march, it is put in a basket and carried on its mother's back for a few days, after which it must keep up on its own. Camels can live to be 25 years old.

An Arabian riding camel or dromedary

THE RESPIRATION OF PLANTS

(*continued from bottom of column one*) keep it burning, and it could be proved by chemical tests that this is indeed the case. But there was certainly oxygen in the air which was enclosed in the jar when we stoppered it at the first stage of the experiment. What has happened to it?

We know that animals carry out a process called respiration by breathing in air and combining the oxygen in it with compounds of carbon and hydrogen in their bodies. By this means they obtain the energy necessary to sustain life, and in the process they use up oxygen. And although it is impossible to observe them doing so directly, plants breathe or respire just as animals do.

EXPERIMENT SHOWING THAT PLANTS BREATHE

Above: seeds in a jar start to grow; the jar is then tightly sealed

The jar has been in a dark place; a lighted candle is inserted ② and the flame dies immediately ③

GERMINATE some seeds in wet sand at the bottom of a large jar. When they are growing well, close the jar tightly ① and put the bottle in the dark for a few hours or overnight. Then take off the lid and quickly put in a short piece of lighted candle as shown ②. The candle will immediately go out ③.

The most likely reason for the candle going out is that there is not enough oxygen in the jar to

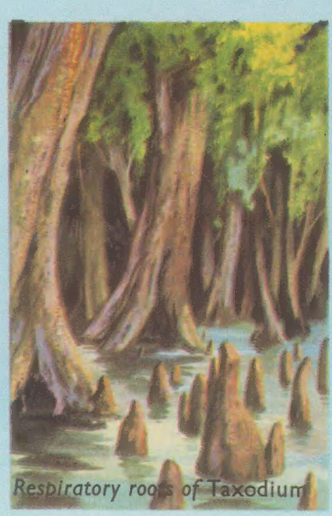
HOW PLANTS BREATHE

Of course, plants do not have any respiratory organs like the lungs of animals. The air they breathe passes in through little openings over the whole surface of the plant. Those on the leaves and other green parts of the plant are called *stomata*, and they are especially numerous on the undersides of the leaves. These stomata can open and close to regulate the rate at which air and various gases pass in and out (see page 1668). In the bark of a tree there are also openings called *lenticels*, which admit air, and even the roots of plants require air for breathing.

Around this tree an area of earth has been left uncovered. If the asphalt surface of the pavement had been continued right up to the base of the tree no air would be able to reach the roots and as a result the tree would not be able to flourish.

Town tree with breathing space

The swamp cypress (*Taxodium distichum*) is an American tree which grows in marshes, often actually in the water. Its roots are immersed in water, so some of them grow upwards above the surface, thus enabling the root system of the tree to breathe.



Respiratory roots of Taxodium

RESPIRATION AND PHOTOSYNTHESIS

On pages 332–333 we described the process of photosynthesis, by which plants, with the aid of sunlight and their green chlorophyll, combine carbon dioxide and water to make their food. In this process oxygen is given out.

The chemical processes involved in photosynthesis and respiration are exactly opposite to one another. In photosynthesis carbon dioxide and water are combined, with the help of energy from the sun, to form compounds called carbohydrates. In respiration carbohydrates are broken down, releasing energy to produce water and carbon dioxide. Photosynthesis results in a release of oxygen while respiration consumes it.

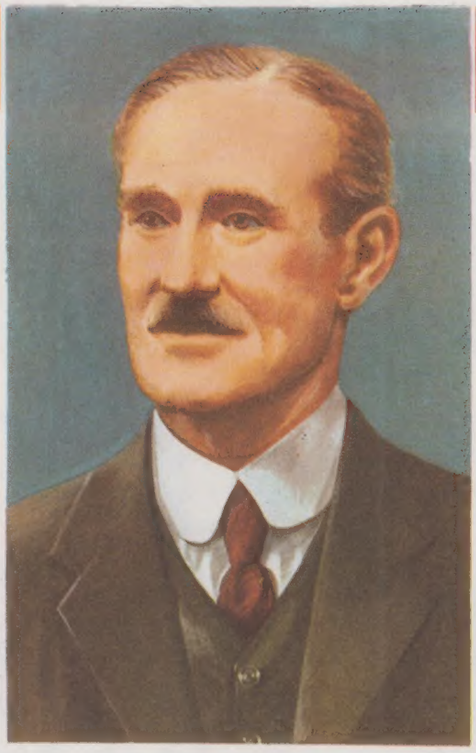
When plants are in the light, photosynthesis is generally in excess of respiration. Therefore the latter process is concealed, and it is difficult to demonstrate that the plant is breathing at all. This is why we had, in our experiment, to keep the jar of green seedlings in the dark for some time. If it had been standing in a fairly strong light, photosynthesis would have exceeded respiration, there would have been plenty of oxygen in the jar, and the candle would not have been extinguished.

TAKING PLANTS' TEMPERATURES

We know that respiration produces heat in animals' bodies; the following experiment shows that plant respiration produces heat as well. Provide two Thermos flasks with corks which have holes in them, and push a thermometer through each hole so that its bulb is inside the flask. Then half fill one flask with soaked corn and the other with corn that has been boiled to kill it, and then allowed to cool. Put back the corks, with the thermometers, and note the exact temperature of each flask. After 24 hours the one with the live grain will show a rise in temperature, due to respiration. The other will show no change.

Water-lily flowers close up at night. A thermometer pushed between the petals into the flower will register a temperature several degrees higher than the air outside.

WILLIAM FRIESE-GREEN



William Friese-Green (1855–1921)

ONE Sunday evening in 1889 a London policeman patrolling in Holborn was accosted by an excited man who insisted that the policeman should accompany him to a nearby building to see the wonderful invention which he had just perfected. Suspiciously the policeman followed him, and in a workshop close at hand he became the sole witness of the first successful projection of a motion picture. On a flickering screen he saw a man leading a small boy through the leafless trees in Hyde Park, and then shots of traffic and pedestrians at Hyde Park Corner. Abruptly the film ended and the policeman went on his way. The man who had shown on that screen the world's first moving picture was William Friese-Green, inventor of the motion-picture camera and projector, and founder of the cinema.

Friese-Green was born in Bristol in 1855. Until 1884 he was plain William Green, but in that year he married Helena Friese and added his wife's name to his own. At the time of his marriage Friese-Green was a successful portrait photographer and in 1885, to improve his business prospects, he moved to London and set up a studio in the West End.

Some years before this Friese-Green had become friendly with J. A. R. Rudge, a photographer and lantern slide projectionist, who was interested in the problem of creating the illusion of movement on lantern slides. Rudge made circular glass slides with a series of slightly differing pictures round the edge. When these were projected in rapid succession the image on the screen appeared to move; but the number of pictures Rudge could fit round the edge of his glass plates was too small for any serious work to be done. Friese-Green was soon seeking something better.

He had the idea of a camera containing a long strip of film which could be moved rapidly, frame by frame, past the lens, thus taking a series of photographs in rapid succession. In 1886, when he started his experiments, the only flexible material available for the film was paper, and so he experimented with long strips of paper, perforated at the edges, which he moved past the lens by means of toothed wheels. But the paper was weak, and the perforation holes frequently tore, and when a length of film was successfully exposed it could not be projected because the paper was opaque. In 1888 Friese-Green learned that transparent celluloid had been produced in the United States and began to experiment with this material. He had to make and coat the lengths of film himself and there were many failures. Eventually, on that Sunday in 1889, his efforts were rewarded.

Stereoscopic cine camera and projector invented by William Friese-Green and built by A. Lege & Co

From success to bankruptcy

Despite his success, Friese-Green never received the recognition he deserved, and this was largely due to his total lack of business ability. True, he patented his camera, but in 1891, when he was short of money, he sold his patent to a man who was not really interested in it, and who allowed it to lapse by not paying the necessary renewal fees. In the absence of patent protection, Friese-Green's rivals and competitors were able to develop the ideas which he had originated. The public first became aware of the new discovery through their efforts, and associated it with their names; the true inventor was forgotten.

Friese-Green made little money from his invention; he was declared bankrupt in 1891, in 1903, and in 1910. The money made by his photography soon went on his numerous schemes. During his life he took out over 70 patents for inventions he had made, but none brought him an adequate income.

In 1921, at a meeting of the Cinematograph Exhibitors' Association, Friese-Green spoke of the contribution which British scientists, engineers, and technicians had made to the development of the cinema industry. Few of those at the meeting recognised him but his speech clearly impressed them. He returned to his seat after speaking and a few minutes later he was seen to slump forward; a man who went to his help found that he was dead. So, penniless and largely unknown, the inventor of the motion picture died among the representatives of the industry he had founded.

EL ALAMEIN

Through the dust and smoke of battle, the British troops advance to victory

THE war in North Africa was going badly. The British Eighth Army was dispirited and panicky. Relentlessly the Axis armies under Rommel had pushed them far back into Egypt. Tobruk had fallen on 21st June 1942 and soon they were holding only a precarious position at El Alamein between Rommel and the heart of Egypt. A little farther and all Egypt, including Cairo and the Suez Canal, would be in Axis hands. Then the Axis would dominate the entire Mediterranean – Gibraltar and Malta would fall . . . Rommel had to be stopped. On 15th August Field-Marshal Alexander took over Southern Command from Field-Marshal Auchinleck; three days earlier Lieutenant-General Bernard Montgomery had arrived in the desert to take command of the Eighth Army.

Stay here alive or dead

Montgomery's arrival was sensational. Within 24 hours he had instilled a new sense of purpose – almost of crusade – into the Eighth Army. He cleared up one point once and for all: 'I have cancelled the plan for withdrawal. If we are attacked there will be no retreat. If we cannot stay here alive then we will stay here dead.'

The military situation was critical. Rommel was expected to attack at any moment. Alexander supplied two new divisions, but drastic reorganisation was necessary. Montgomery moved the Army headquarters to Burg el Arab where communications were good and where he could work in co-operation with the Air Force. He improved conditions for his men. And he decided to create a panzer corps of his own. If Rommel had one (the Afrika Korps), he must have one. This new heavily armoured mobile force (the Tenth Corps) was created out of two armoured divisions and one motorised one.

Montgomery's plan to defeat Rommel was two-fold: first, Rommel's expected attack must be beaten off, but there must be no pursuit. Only when everything was ready was the second part of the plan to go into operation – the attack which was to fulfil the one and only order Montgomery received from Alexander: 'Go into the desert and defeat Rommel.'

Shock for Rommel

The first part of Montgomery's plan went like a dream. Basically it was this: the British line extended southwards for about 40 miles from the sea in the north to a rocky area known as the Qattara Depression. Along this line the three vital points were *Tel el Eisa* on the sea; *Ruweisat Ridge* in the centre; and *Alam Halfa* in the south. He decided that Rommel would attack in the south and regrouped his forces accordingly. He directed a withdrawal to Alam Halfa and ordered the gap to be mined. The Seventh Division, under General Harding, was then sent to lure Rommel into the gap and to fall back in front of him. Then, when Rommel was in the 'corridor' between the Depression and Alam Halfa, a concentrated British attack from the reinforced position of Alam Halfa (including one of the new divisions) would blow him to pieces.

Everything went according to plan and after furious fighting between 30th August and 7th September, Rommel withdrew. Montgomery now prepared for the finale.

Montgomery observing the battle

The chosen night was 23rd October – the night of a full moon. Fake trucks and tanks were constructed and real ones were concealed. The plan was to break through in a small area to the north-centre of the German lines so that once through Montgomery's forces could wheel either north or south according to how the battle developed. The initial assault (and the clearing of the minefields) was in the hands of seven infantry divisions. The Armour was then to blast its way through the small 'pocket' created by the infantry.

Montgomery's troops, with Australians in the north, British and Indians in the centre, New Zealanders and South Africans in the south, numbered 150,000. He had 1,114 tanks, including 267 Shermans sent from America. Rommel had Germans in the north and centre, with Italians in the centre and south. Of his 500 tanks 300 were hardly fit for war.

'Hit for six'

On the morning of 23rd Montgomery issued the first of his famous orders of the day: 'The battle which is about to begin will be one of the decisive battles of history. It will be the turning point of the war. The eyes of the world will be on us, watching anxiously which way the battle will swing.

'We can give them their answer at once: it will swing our way . . . there can only be one result – together we will hit the enemy for six, right out of North Africa.'

The battle began at 9 p m on 23rd October and lasted a fortnight. Rommel was on sick leave in Germany at the time and arrived in Rome two days later to find news of a desperate fuel crisis, and a shortage of food and ammunition. And he found his men were being driven back from their El Alamein positions with severe losses.

Montgomery's first breach went according to plan. But the Armour which entered the gap on the 24th got bogged down in enemy minefields. The Germans kept up such a constant blast of punishing fire that the original plan to wheel south had to be abandoned. Montgomery's alternative plan, pushing towards the north and west, made some headway. And in particular the Australians in the extreme north began to push the enemy out of their coastal positions. But the costs on both sides were frightful. Rommel wrote: 'Rivers of blood were poured out over miserable strips of land.'

By 26th October Montgomery realised his attack was weakening and caused consternation, both in Cairo and among the British War Cabinet, by suddenly withdrawing part of his Tenth Corps from the battle. He knew what he was doing. The Armour was replenished with reserves of tanks and men, and they were strengthened by the addition of General Freyberg, V C, with his New Zealanders who had also been withdrawn from the line.

Field-Marshal Erich Rommel

The vital question was, where would the revitalised force strike? At the decisive moment came the Intelligence report that the entire German army was moving north, leaving only the rather inadequate Italian forces in the south. This settled the matter. Montgomery on 2nd November sent his men into the juncture between the Germans and the Italians. (This assault was code-named 'Operation Supercharge'.) At one blow the Axis army disintegrated. Though it suffered great losses itself the Tenth Corps created havoc with the Afrika Korps, which was reduced to 35 effective tanks. On 3rd November Rommel wired Berlin for permission to retreat, and began the withdrawal in anticipation of a 'yes'. Back came Hitler's insane reply: 'Stand fast and yield not a yard of land.' The retreat was halted, but by now the Axis troops were in utter chaos. The Royal Air Force poured withering fire into the enemy columns and Italian tanks were split open one by one. Thousands of dazed Italians surrendered to General Horrocks. The Afrika Korps was shattered and its commander, General Thoma, captured.

On 4th and 5th November Rommel pulled out, Hitler's order having changed *after* the final retreat began. Pursued for hundreds of miles back across the desert, it was only heavy rain and Montgomery's caution which prevented the Axis' complete annihilation. Even so, Tobruk and Benghazi were captured. The British were now firmly entrenched on the Mediterranean coast, and a great milestone had been passed on the road to final victory.

British troops capture an enemy tank

THE MAKING OF EUROPE

WE have already seen in our article on Barbarian Invasions (see page 2336) how the ancestors of the European peoples of today came to settle in their respective states. We have also seen how these people set up primitive kingdoms (see page 1506), and we have seen how one great man, Charlemagne, came so to dominate all these people that on Christmas Day, A D 800, he was crowned their Emperor (see page 42) in Rome.

Charlemagne's Empire

Charlemagne's Empire stretched over France, much of Germany, half of Italy, and a bit of Spain. Not until almost exactly a thousand years later, in the time of Napoleon, was so much of Europe to be ruled by one man. But unlike Napoleon's rule, Charlemagne's was scarcely felt away from the centre of his Empire. In the clearings of the great forests of northern Germany, in the mountain villages of Bavaria, in the great western coastline of his empire and in the valleys of south-west France, he was Emperor only in name. The men who held the power were the local lords.

It was only in the heartland of his Empire, in the area 100 miles or so on either side of the northern Rhine, that his personal power was felt. Here, nearly 30 years after his death, his grandsons met to divide his Empire. The treaty that Lothair I, Lewis the German, and Charles the Bald signed was to result in the foundation of modern France and Germany. But it was also to cause nearly 1,100 years of intermittent conflict. In 1870, when the Franco-Prussian war broke out, German troops marched into Lorraine to seize the territory which was allotted to Lothair. The possession of this had been disputed by France and Germany on and off since the original treaty. In the 1914–1918 war, when fighting broke out between France and Germany again, it was at Verdun, where the fateful treaty was signed, that some of the heaviest fighting of the war occurred.

To understand the treaty we must go back to the reign of Lewis the Pious, Charlemagne's son. He was not a strong ruler, and under him his sons continuously quarrelled with each other and him. When he died in 840, two of his sons, Charles the Bald and Lewis the German, allied against the eldest, Lothair I, the new Emperor. In 841 they defeated him decisively at the Battle of Fontenoy. They confirmed their alliance by a famous oath taken at Strasbourg. Charles's

Lewis the German and Charles, later called the Bald, after defeating their elder brother

vassals swore this oath in a language remotely resembling modern French, and Lewis's in one resembling modern German. This was significant, for it showed there was already a distinction between the eastern and western halves of the Carolingian Empire. In August 843, at Verdun, Lothair was forced to agree to a great partition of the Empire. Charles the Bald got the western half, which became the Kingdom of the West Franks; this roughly corresponded to France today, excluding Burgundy, Provence, and Alsace-Lorraine. Lewis the German got the eastern half, which became the Kingdom of the East Franks and was roughly the equivalent of what West Germany is today. And for Lothair the 'Middle Kingdom' was created. Today this would comprise much of the Low Countries, Lorraine, Burgundy, and the northern half of Italy.

Until Lothair's death in 855 the brothers contented themselves with only an occasional bickering. But when he died Charles the Bald and Lewis the German

The three parts into which the Carolingian Empire was divided at the Treaty of Verdun

turned their greedy eyes on the Middle Kingdom. The Emperor Lothair had divided his dominions between his three sons (to follow the rather complicated history that follows, please keep your eye on the family tree at the bottom of the page); Lewis II, who succeeded his father as Emperor, had been given Italy; Lothair II, Lothairingia; and Charles, an epileptic nonentity, Provence and Lyons. In 858 Lewis the German turned on his former ally and unsuccessfully invaded Charles the Bald's kingdom. He was persuaded by the Frankish bishops to withdraw and preserve a certain amount of statesmanlike restraint. In fact, in this war-like period, it was the bishops alone who showed any statesmanlike qualities.

In 869 Lothair II of Lothairingia died and his dominions were promptly divided up by Charles the Bald and Lewis the German at the Partition of Meersen in 870. They also swallowed up a large share of the land of the epileptic Charles which had been previously divided between Lewis II and Lothair II.

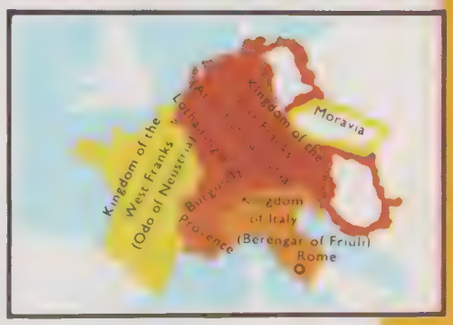
Not satisfied with the considerable spoils they had already gained from the Middle Kingdom, Charles the Bald and Lewis the German now transferred their covetous gaze to Lewis II's kingdom of Italy. In 875 Lewis II died, and Charles and Lewis the German both attempted to obtain his imperial crown. Charles was successful; fortunately for him Lewis the German died the next year. Charles promptly made an attempt to seize Lewis the German's share of Lothairingia, but was defeated by Lewis the German's son, Lewis II the Younger, at Andernach.

In the next year, 877, Charles himself died and was succeeded by his feeble son, Louis II the Stammerer, who died two years later. Louis II's two elder sons, Louis III and Carloman, could not withstand Lewis II the Younger's move to grab their share of Lothairingia. But Lewis II, Louis III, and Carloman all died within a few years of each other. As the only heir to the Kingdom of the West Franks was a child, Charles the Simple, Charles the Fat, the incompetent brother of Lewis II, was elected Emperor of both the West and East Franks.

Charles the Fat was incapable of governing, and in 887 a general rising ended in his deposition. Germany chose for her king the illegitimate Carolingian Arnulf of Carinthia; France chose Odo, the ruler of northern France. Separate kingdoms were set up in Provence, Burgundy, and Italy.

The result of this was that Europe had taken on political divisions which were to last over 1,000 years. The Kingdom of France was founded, the separate identity of Germany was established. Provence, Burgundy, Lorraine, the Low Countries and Lombardy had already assumed their semi-independent characters, and this confusion as to their ownership was to make them not only the cause but centres of European strife.

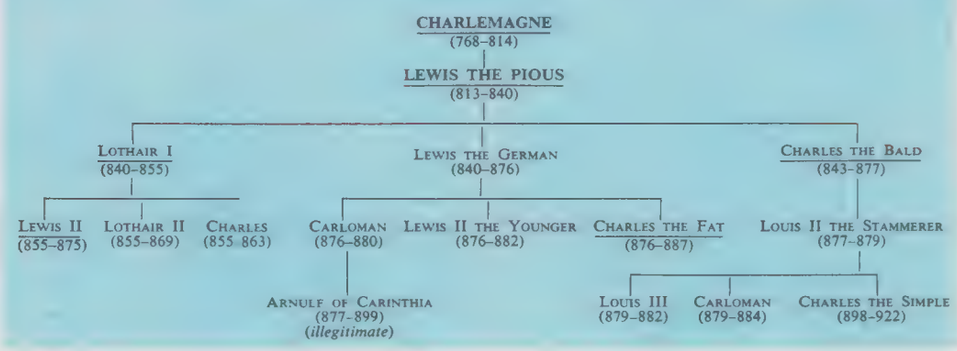
Map showing how Lothairingia was swallowed by Charles the Bald and Lewis the German in 870



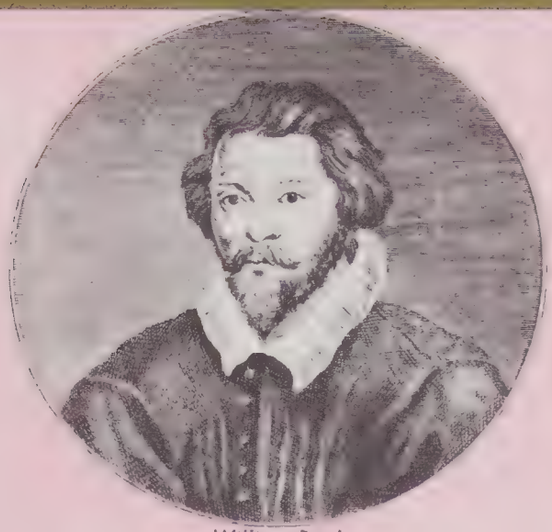
Modern Europe takes shape – how the Carolingian Empire was divided up after the deposition of Charles the Fat in 887

Lothair, meet at Strasbourg to read the famous oath to their assembled vassals

CAROLINGIAN FAMILY TREE



MUSIC IN ENGLAND



William Byrd
(1543–1623) – *versatile*

Henry Purcell
(1659–1695) – *pre-eminent*

George Frederick Handel
(1685–1759) – *dominant*

'THEY have so much of it in England that the monks attend to nothing else. A set of creatures who ought to be lamenting their sins fancy they can please God by gurgling in their throats. Boys are kept in the English Benedictine colleges solely and simply to sing hymns to the Virgin.'

This is what the great Dutch scholar Erasmus wrote about England in the reign of Henry VIII. And it is true that the Tudor sovereigns encouraged music, were often themselves fine performers, and that under them music in England more than equalled that of any country in the world.

Yet England by and large has been known as an 'unmusical' country, and it is only in the 20th century that this stigma has been to some extent removed. Today England has composers, conductors, orchestras, and festivals of high international reputation. Many provincial cities like Liverpool, Manchester, and Birmingham have first-class orchestras, while in London there are the Royal Philharmonic Orchestra (founded 1946), the Philharmonia (1945), the London Symphony Orchestra (1904), the London Philharmonic (1932), and the BBC Symphony Orchestra (1922) to name but a few. Regular concerts and recitals are held at the Festival Hall, the Albert Hall, and the Wigmore Hall, while opera flourishes at Sadler's Wells and at Covent Garden, which, under its musical director Georg Solti, is getting a reputation which looks like making London as important in the world of opera as Vienna, Milan, and Berlin. Every year thousands enjoy the season of Promenade concerts at the Albert Hall. The 'Proms' were founded in 1895 by Sir Henry Wood; they are now held at the Albert Hall and are usually conducted by Sir Malcolm Sargent. Outside the capital the outstanding British musical events are the international festival at Edinburgh and the National Eisteddfod of Wales, while the gramophone, sound broadcasting, and television have brought the greatest music and finest performances within the reach of everyone. Among English composers Benjamin Britten ranks with the finest in the world. In 1945 his opera *Peter Grimes*, the first great English opera of the century, began a revival continued by his own *A Midsummer Night's Dream* and Michael Tippett's ambitious *King Priam*. Britten's latest work, the *War Requiem*, has received widespread acclaim. Other notable English composers are Sir William Walton, Herbert Howells, and Sir Arthur Bliss; and Ralph Vaughan Williams, who, when he died in 1958, had contributed much to English music.

How then did England get her 'unmusical' reputation? How can we account for the Dark Ages between the 16th and 20th centuries? The reason is simple. In the enormous advances made in music between these dates English composers were not as good as their counterparts in the rest of Europe, and they only began to catch up in the present century. These developments included opera and oratorio and immense advances which resulted from the invention of new instruments and the enlargement of the orchestra. In all these developments it was foreign musicians who dominated the scene in England. English composers degenerated into second-rate copiers and most of their names are hardly remembered.

Rosy beginnings

Music in England was already old when Henry VII came to the throne in 1485. Plain chant had been introduced by St Augustine when he landed in Kent in 597, and for most of the Middle Ages plain chant is virtually the only music of which we have manuscript records. Yet in the 13th century we know of two pieces: the *Hymn of St Magnus* in Scotland and a Wessex 'round' called *Sumer is icumen in*. Both are elaborate pieces of the type known as *polyphonic*, in which each part has its own melody while blending with the others. These are not only the earliest works of their type in Britain but in the world, and music was so important in early England that in 1463 we find the very first Doctor of Music degree awarded at Cambridge University. The Tudors loved music and encouraged it. Henry VIII might himself have been a composer, while Mary I was very accomplished on the virginal (an early harpsichord), and Elizabeth little less so. Many composers like Cornyshe, Fayrfax, Taverner, Tye, and Tallis received official appointments.

The 16th century was the golden age of polyphonic music and all Tudor composers excelled at it, writing elaborate motets, masses, and anthems used in both Catholic and Anglican services. Like literature, music reached memorable heights in the reign of Elizabeth. The greatest Elizabethan composers were Orlando Gibbons, Thomas Morley, John Dowland, and above all William Byrd.

The Elizabethan age was a time of 'domestic' music, when almost everyone could sing a part and play an instrument. But concerts, or, as they were then called, 'consorts of music', were just beginning. Performances were given in rich people's homes, for people never 'went to consorts' like we go to concerts today. These consorts were given by 'sets' of viols, which were the ancestors of modern stringed instruments and ranged from treble to bass with perhaps recorders

Sir Arthur Seymour Sullivan
(1842–1900) – *talented*

Sir Edward William Elgar
(1857–1934) – *among the greatest*

Sir Henry Wood
(1869–1944) – *founder of the 'Proms'*

(early flutes), curtalls (early bassoons), virginals, regals (organs), and lutes as well. William Byrd excelled at writing all types of music – canons and masses, madrigals, and particularly the 'fantasy' (in which the composer would let his 'fancy' wander). Byrd's intricate and interwoven melodies are the direct ancestors of the later fugue. It has been written of Byrd that he was 'one of those universal geniuses capable of enlightening with sovereign ease any species of their work current in their time and passing them on enriched to future generations'. Morley as well as Byrd excelled in madrigals and set some of Shakespeare's songs to music, while John Bull (who gave his name to the 'typical' Englishman) was an able church musician. Once the Elizabethans had died English talent declined rapidly. The Stuarts populated their court with foreign musicians. Indeed the very brilliance of Elizabethan works meant that foreign performers were invited over to play them. Apart from the early Stuarts' preoccupation with foreign musicians, the horrors of the execution of the King and the civil war would have made music stagnate.

This trend which was rendering England more and more an unmusical nation was obscured by the arrival of a very great genius – Henry Purcell. He was born in 1659 and stood head and shoulders not only above all his contemporaries in England but also above most in Europe. Purcell was the one Englishman capable of absorbing and improving on continental developments. Thus he wrote much for the new-fangled violin and 'cello, while his opera (opera was all the rage in Italy) *Dido and Aeneas* is by far the oldest regularly played today.

Rapid decline

After Purcell's tragically early death in 1695 there was really no Englishman capable of holding his own against the influence which came, mainly, from Italy and Germany. This did not mean that music in England as opposed to English music was dead. At the start of the 18th century it was opera, at the end public concerts which captivated public attention. Many of the great continental musicians like Mozart and Haydn visited the country. The Haymarket Opera became a Royal Academy of Music in 1719, and the Three Choirs Festival (still flourishing today) was founded in 1724. The most important influence on the music of the time was that of Handel, who arrived in England in 1711 and completely dominated the musical scene. Nearly all his great works, including the *Water Music* and the *Messiah*, were first performed in Britain. But Handel's dominance was so complete that of the English composers only Thomas Arne and William Boyce showed much originality.

In the 19th century music in England reached its lowest ebb, though in the first part musical life flourished and the Philharmonic Society (1813) showed taste in advance of many continental countries. But music in the middle of the century was dominated by Mendelssohn, whose influence was not wholly good. Charming and fluent as his music was, the English latched on to its least admirable aspect – its sentimentality – which became characteristic of Victorian music. Nevertheless the 19th century laid the foundations of music in England today, in the provincial festivals and concerts given in the Crystal Palace and other halls. Although much was expected from Arthur Sullivan, his serious works (unlike his brilliant comic operas like *The Mikado*) were mediocre. But two other composers in particular – Parry (1848–1918) and Stanford (1852–1927) – though not ranking among the best English composers, greatly improved the general standards; and a strong younger generation of composers was growing up. They included Elgar (born 1857), Delius (1862), Walford Davies (1869), Vaughan Williams (1872), and Holst (1874). Edward Elgar is now regarded as one of the really great English composers; his works, among the best known of which are the *Enigma Variations*, the *Dream of Gerontius*, and the march *Land of Hope and Glory*, have great individuality.

These composers not only raised the reputation of English music abroad but stimulated public interest in music, making it possible for England in the 20th century to become a truly 'musical country'.

Ralph Vaughan Williams
(1872–1958) – *contributed much*

Sir Malcolm Sargent (1895–)
– *popular*

Benjamin Britten (1913–)
– *internationally acclaimed*

THE RESTORATION

The Civil War is over. Charles II lands triumphant at Dover to reclaim his kingdom

'THERE has never been such a Restoration since the Jews returned to Israel.' So cried one ecstatic citizen as he watched the King's triumphant progress into London. And indeed there had not. To the cheering, tumultuous masses who thronged the narrow streets of London to welcome Charles II it must have seemed like the Entry to the Promised Land. As Charles rode in splendid state into his reclaimed capital on a bright May morning in 1660, there was not a still voice and there were few dry eyes. For the King had returned. The dreadful execution of his father in 1649 was but a memory. The dictatorship of Oliver Cromwell was, thankfully, over. Many uneasy consciences – uneasy because they had quietly acquiesced in the death of a king – may have felt their shouts and whoops were purging their sin; and they shouted louder accordingly. Anyway, all London turned out to welcome him.

Those who joyously greeted Charles were glad not only for the King but for themselves. Few had enjoyed the rule of Cromwell. The dictatorship had stifled more than the constitutional liberties of the individual, won in the 1640's at the expense of Charles I; it also stifled the everyday pleasures of life. The austere Puritans had closed theatres, imprisoned actors, condemned poetry, scorned frivolity, abolished processions, and removed the pageantry and colour which enriched the otherwise simple lives of the people. They had stripped the churches of their ornaments, the priests of their robes, and the bishops of their jobs. England had been ruled by an army with a fanatic at its head. And in their leisure hours that fanatic had expected ordinary mortals to derive as much pleasure and benefit as he did from three-to-four-hour sermons and deep meditations on the Scriptures.

Of course there were those who regretted the passing of the Puritan regime. But such a regime had far less supporters in 1660 than in 1649; and those that were left were largely those who felt that drabness was next to Godliness. By and large it is hardly surprising that so many hoped so much from the Restoration.

None were more pleased than the churchmen. For the resurgent Anglicanism which came with the Restoration provided for both their beliefs and their employment. In particular the bishops returned to their sees and to the House of Lords. Archbishop Sheldon became an important member of the government and he was partly responsible for the harsh laws known as the Clarendon Code (after Charles's leading minister) aimed at the Puritans and passed between 1661 and 1665.

So the Restoration meant the return of the King and of the bishops. It also meant the return of Parliament. The famous 'Cavalier' Parliament, elected in 1661 in the first flush of enthusiasm, proved so amenable to the King that he kept it in being for 18 years. Yet the heady atmosphere of the early years soon gave way to disillusionment. The Commons could not forget that they had once brought a king first to his knees and then to the block; above all Charles's religious and foreign policy upset many who had supported his return. The wars with the Protestant Dutch (1665–1667 and 1672–1674) were unpopular not only for religious reasons but because, militarily, Britain was humiliated. To add to the miseries the First Dutch War coincided with the disastrous Great Plague and the Great Fire of London. In addition the High Church seemed to many to be getting too High. In fact people accused Charles of 'Popery', while this itself caused rapid growth in the ranks of the most militant anti-papists – the Puritans.

Biggest confidence trick ever

Out of this conflict grew the Two Party System Britain has today. Around Danby, Charles's chief minister in his later years, developed the High Church 'Court' Party who became known as the 'Tories'; while around the Puritan opposition leader of the 'Country' Party, Lord Shaftesbury, developed the 'Whigs'. Their enmity reached a climax both of violence and absurdity in the Popish Plot which began in 1678. A professional liar

(polite historians say 'adventurer') called Titus Oates and his disreputable associate Israel Tonge pulled one of the biggest confidence tricks ever. They persuaded the House of Commons (and many members by this time were quite ready to be persuaded) 'that there has been and still is a damnable and hellish plot, contrived and carried on by Popish recusants for the assassinating and murdering the King and for subjecting the government and rooting out and destroying the Protestant religion'. Charles knew perfectly well that he was not going to be 'assassinated and murdered', or either, but was powerless to control the agents of the Country Party. Many respectable and loyal Catholics were executed and Charles dissolved his Cavalier Parliament. How he got himself out of this position, re-established his authority, and died respected and more or less loved in 1685 we cannot relate here; but he did.

Worldliness and the end of the world

Despite these calamities the Restoration never quite lost that first wonderful feeling of escape – escape from the chains of Cromwell. Free enquiry and speculation (despite censorship in various fields of a kind which would be intolerable today) began again after the full stop it came to under Cromwell. The arts and sciences flourished. Dryden (see page 2222) led the way in poetry; Purcell in music; Wren, who rebuilt London after the Great Fire, in architecture; while Restoration drama has a permanent place in the history of English literature. The Theatre Royal, Drury Lane, was founded in 1663; and theatre-going became a popular pastime of the upper classes. The Royal Society (see page 2412) which has done so much to foster scientific progress in England was founded in 1662. Some of its greatest members were also among its earliest, including Boyle and the incomparable Newton.

Yet we shall misunderstand Restoration England if we think of it as essentially an age of flamboyance and worldliness. This was the atmosphere of the Court. The famous diaries of Samuel Pepys give us a vivid insight into this gay extravagant world.

But the bulk of the people remained devout and basically Puritan. Many of those who disliked Cromwell's politics liked his religion; and if they welcomed Charles because he was the rightful king and because Cromwell had been overzealous, they were not prepared to abandon their faith even in face of the Clarendon Code, nor stomach a revival of that greatest of all *bête noirs*, 'Popery'.

Therefore, while we should remember the secular, enlightened attitudes of the Court we should not forget men like Roger Crab. Crab lived by his Bible, like 99 per cent of the people of 17th-century England. If he was more devout than most, he was not more devout than many; and if his habits were strange, his mind was, in many ways, the mind of Restoration England.

He was born in 1621 and died in 1680. One day he was reading his New Testament and came across the words: 'If thou wilt be perfect go sell what thou hast and give to the poor.' He wanted to be perfect, so he gave what he had to the poor. Taking perfection a stage further he resolved to restrict his diet to vegetables and water. As time went on he dropped potatoes and carrots from his diet and lived on bran and broth and turnip leaves: finally he was reduced to dock leaves and grass. Here is his own story:

'The Old Man (meaning my Body), being moved, would know what he had done, that I used him so hardly. Then I showed him his Transgression . . .: so the War began. The wonderful Love of God, well pleased with the Battle, filled him (the Old Man) full of Love, Peace, and Content in Mind. And (he) is now become more humble; for now he will eat Dock leaves, Mallows, and grass, and yields that he ought to give God more Thanks for it than, formerly, for roast Flesh and Wines.'

In the mid-17th century there were many austere gentlemen who discovered instruction in the Bible for every kind of self-denial. John Robins was another 'vegetable and water man', who killed off many of his disciples by persuading them not to eat. Crab's one disciple, a certain Captain Norwood, left the world that much the quicker for exactly the same reason. We would be underestimating men like Crab if we imagined that they could abandon their habits and beliefs just because an Anglican king replaced a Puritan dictatorship.

But if there were many like Crab there were still more like John Mason who believed that the end of the world was at hand. By the mid-17th century there were literally thousands of earnest characters who believed that the Coming of Christ on Earth was imminent. In 1661 a group of them held part of the City of London for a few days in readiness 'For King Jesus'. Mason himself thought that the world would end in 1694 and gathered a little band some hundreds strong to wait for it at Water Stratford. Unfortunately he died in May of that year, and believing that the world could not end without him, his disciples confidently awaited his Second Coming. This sect lasted till about 1740 when, it seems, they gave up.

Then there was Thomas Beverly who prophesied the end of the world for 1697. In 1698 he wrote a book to prove that the world had ended but nobody had noticed it. . . .

What then was the character of the Restoration? Generalisations are never accurate. But there is something in the biblical passions and extremism of the 17th century which makes us feel that, if the 16th century was an 'age of common sense tinged with fanaticism', the 17th was a century of fanaticism tinged with a very small amount of common sense.

Anti-Catholic hysteria grows. Effigy of the Pope being burned at the time of the Popish Plot

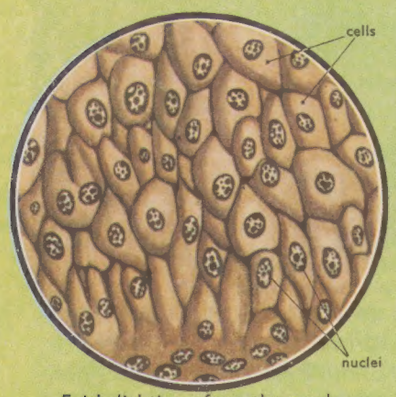
ANIMAL TISSUE

IN a tiny animal such as an amoeba, all the biological functions necessary for the animal's existence take place within a single cell. Part of the cytoplasm, for example, acts as a protective 'skin', part secretes the enzymes needed for the digestion of food, and the cell as a whole can alter its shape and thus move about.

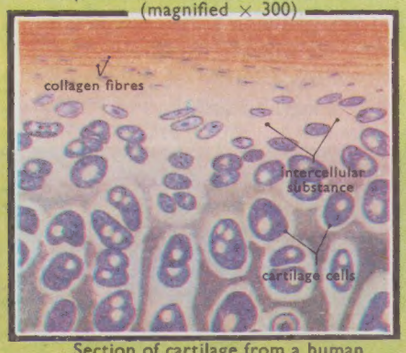
In a larger, multicellular animal a more sophisticated plan is found. Each biological function is performed not by part of a single cell but by a group of cells acting together. Thus one group forms the skin, another secretes digestive enzymes, and yet another forms the muscles. In each group the cells are associated with a greater or lesser amount of *ground substance*, or *matrix*, and together the cells and the matrix form a *tissue*. Both are arranged in a way that enables them to perform their particular task well, and, incidentally, to be recognised easily when examined under a microscope.

In an animal as large and as complex as a human being, the number of different tissues is quite considerable. Nonetheless they can all be classified in one of four groups: *epithelial tissue; connective tissue; muscle tissue; nervous tissue.*

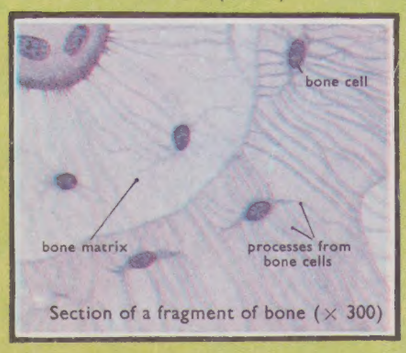
We must not imagine, however, that the cells in each part of the body only belong to one group of tissue. In many places several different tissues are mingled together and in this way the characters of the various tissues are combined in the bodily *organs*.



Epithelial tissue from the ear-drum (magnified × 300)



Section of cartilage from a human trachea (× 200)



Section of a fragment of bone (× 300)

EPITHELIAL TISSUE

The epithelial tissues are the covering tissues. Skin is an epithelial tissue, and so too are the mucous membranes which line many of the internal cavities of the body – for example, the lining of the mouth, the stomach, and the intestine.

In some forms of epithelial tissue the cells are very flat and are only one layer thick. In contrast to these forms of *simple epithelium* are the many-layered *stratified* forms such as the skin and the internal lining of the mouth.

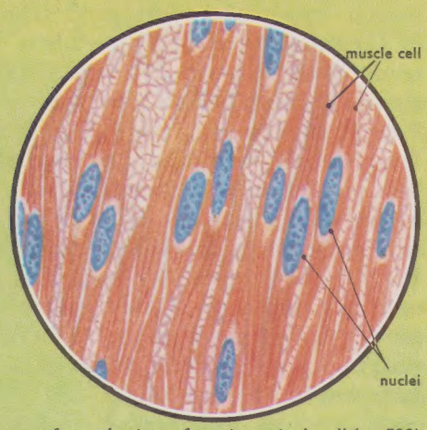
One characteristic feature of epithelial tissue is the close proximity in which the cells are arranged together, with hardly any intercellular matrix.

CONNECTIVE TISSUE

The task of connective tissue is chiefly to maintain the architecture of the body. Bone, cartilage, the tendons which join muscles to bone, the ligaments which join bone together, and even the delicate fibres which lie under the skin and maintain its tension are all forms – though very different forms – of connective tissue. Blood is often regarded as a type of connective tissue.

The very great differences between the several types of connective tissue are due largely to the character of the matrix lying between the cells. Thus bone is hard and rigid because its matrix is largely formed of the phosphates and the carbonates of calcium and magnesium. The matrix in tendons is formed of tough inextensible white fibres all running parallel to each other, and the connective tissue beneath the skin is flexible because of the yellow elastic fibres that it contains.

Blood is a particularly interesting form of connective tissue because in it the matrix is liquid. The cells all float about freely and are not permanently attached to each other.

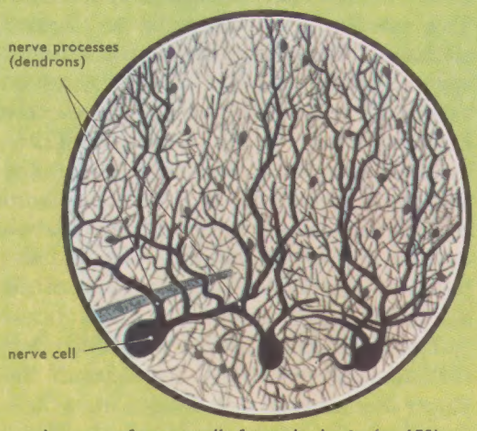


Fragment of muscle tissue from intestinal wall (× 500)

MUSCLE TISSUE

Muscle tissue is formed mainly of long, thin, spindle-shaped cells which are unique in being able to contract in response to nerve impulses. The muscle cells are arranged in bundles in the muscles. When the cells contract the bundles shorten and so the two ends of the muscle are pulled closer together. In this way the structures to which the muscle is attached are moved.

Muscle provides an excellent example of the way in which several tissues combine to form an organ. Not only does it consist of muscle fibres but the fibres are held in position by connective tissue, blood flows through its arteries and veins, and nerves run between the bundles.



A group of nerve cells from the brain (× 150)

NERVOUS TISSUE

Nerve cells have two very special and important features. The first is that many have thin *processes*, *axons* and *dendrons*, which extend from the cell and reach tissues in other parts of the body. The second feature is the ability of these thin processes to carry little electrical impulses. Through these two features nerve cells are able to form a network of *nerves* which carry messages to and from the brain, and throughout the body.

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Atheism in Russia; children carrying placards advertising irreligious books. Marx condemned religion as the 'opium of the people'

it becomes a material thing, Marx would contend that the thought itself is the result of the economic necessity to make tools and the materials at hand. Hence Marx's theory is called *Dialectical Materialism*.

Marx's threefold process therefore works only in material things, and in particular he used the dialectic to forecast the doom of capitalism and the triumph of Communism. Feudalism (the landlord-serf system of the Middle Ages) is a *thesis*, capitalism (the employer-employee system of 'bourgeois' society) the *antithesis*, and Communism (the classless system of the future) the *synthesis*. Marx was obsessed with the idea of the clash of opposites. He thought large groups of workers would have to be exploited to provide the capitalists' profits, but they in their turn would clash with and overthrow the capitalist regime. In his own vivid language 'capitalism produces nothing but its own grave-diggers'.

Marx's view of history was therefore of an unending struggle between opposite forces – unending, that is, until Communism should take over. All conflicts, he said, are the same. They are between the exploiters (whether landlord or factory owner) and the exploited (whether peasant or factory hand). Thus, according to Marx, 'the history of all hitherto existing societies is the history of class struggle'.

Marx 'proved' that the capitalist was a robber who systematically lived off the sweat and toil of the worker. He proved this by the *Theory of Surplus Value* – that is, that the labourer is entitled to the full value of the labour he puts in on a raw material, but in fact it is precisely from this labour that the capitalist derives his profits.

Thus Marx's ideas were more than a programme of revolution. They were a philosophy of history which not only claimed to interpret the past but accurately to forecast the future. Communists were instructed to hasten this inevitable revolution in society by any means whatsoever, like lying or assassination. All morality – that is, what *ought* to be – became eclipsed in the struggle for what *must* be. He condemned religion as a tool of the exploiters to keep the eyes of the exploited on the fruits of the next world rather than the miseries of this. The end of this struggle would inevitably be (after an interim 'dictatorship of the proletariat' [industrial labourers]) the establishment of a classless society in which, with no ruling class, the state as we know it would 'wither away'.

Armed with these powerful doctrines, and encouraged by the certainty of success they provided, Marxists entered the conflicts and struggles of succeeding generations with the same crusading fervour that had inspired Muslims and Christians in previous centuries.

After Marx

'Communism' as a word did not really catch on until 1917. Until then the Marxist parties formed in various countries, including Russia, called themselves 'socialists', or sometimes 'social revolutionaries'. The Bolsheviks were only one small very left-wing group within the Marxist party in Russia. But after the overthrow of the Tsar in 1917 the Bolshevik leader Vladimir Ulianov, known as Lenin, changed the name of his group to 'Communist'. In November (our calendar) the Com-

Eastern Russia has few schools; here Siberian children have lessons in a touring train

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munists seized power in Russia and from then on they provided the only officially correct interpretation of Marx; and the Russians became the leaders of world Communism.

Lenin was the second great figure in the Communist movement. His most significant contribution to Communist thought was his analysis of the 'dictatorship of the proletariat'. He realised that the transformation to a 'classless society' would be long and painful but felt it essential that the Communists should retain power. Therefore, if there was opposition, it must be crushed and only the Party had the right to speak on behalf of the 'toiling masses'. Therefore, instead of the people owning the state, the state came under the tyranny of the Communist Party.

The revolution transformed the nation. The customs of centuries went overboard in a matter of weeks. The Church was persecuted, the land was confiscated and given to the peasants, and private property was taken from the previous owners. Theoretically the government was in the hands of the *soviets* (bodies of elected representatives of the people). But in fact even the Supreme Soviet had little power. The real rulers of the Soviet Union were the leading officials within the Central Committee of the Communist Party.

The early years of Communism in the U S S R were hard ones. The First World War had wrecked the country's economy and the Communists were therefore obliged to use repressive measures. Far from being a haven for the workers Russia became as much a dictatorship as Nazi Germany. It had a similar system of propaganda, police, and spies. Repression reached its climax under Stalin, who established his supremacy in Russia in about 1925. He launched an attack on the richer peasants, in the process of which some 5 million people were brutally transported to Siberia; 1 million of them perished. And his ruthless drive to 'collectivise' agriculture and to mobilise all available man-power in the early 1930's resulted in the starvation of many millions of peasants.

Opposition grew and Stalin's reign of terror got worse. In 1936–7 the storm broke; in a terrible and bloody purge thousands of Communists were eliminated by Stalin. They included many prominent men like Kamenev, Zinoviev, and Bukharin, while three-quarters of the Central Committee of the Party disappeared almost overnight. Whether they were imprisoned, shot, or are still alive is to this day unknown.

The extent of Communism today. Red areas show countries under Communist rule; dark red areas show China and her supporters; pale red areas show Russia and her supporters

The Iron Curtain

According to Marx and Lenin the Russian Communist revolution should have seen a simultaneous revolution in the capitalist countries of Europe. It is true that in the first years after the Russian revolution Communism flourished in France, Italy, and Germany. Then reaction set in. Later in Germany and Italy the Nazi and Fascist regimes persecuted the Communists.

So two most significant things happened. First, the Russian Communists abandoned, temporarily at any rate, their world-wide revolutionary programme, and set about establishing themselves in the Soviet Union. Stalin was important in forming this doctrine of 'socialism in one country'. Secondly, the Communist Party in the U S S R, which in the days of Lenin had looked west for support among the proletariats of Europe, began to look east. A Communist Republic was set up in Mongolia in 1921, while in China Communism made great advances under Mao Tse-tung. And so began that division between east and west – Communist and capitalist – which is with us today, but which Marx and Lenin would not have understood.

Communism today

About half the world's population lives under Communist rule. The Second World War gave the U S S R her chance to support the establishment of Communist regimes in many east European countries. In China, Mao Tse-tung received Japanese war materials from the Russians and was able to take over on the mainland. During the Korean War (1950–1953) he instituted a reign of terror, slaughtering tens of thousands of nationalists – many at public executions which the people were ordered to attend to shout and jeer at the victims.

No Communist government has yet brought about the socialism envisaged by Marx, and the dictatorship of the proletariat has universally become the dictatorship of the Party. Nor do Communist states show any sign of 'withering away'.

Nevertheless the achievements of Communist rule have been startling, particularly in the U S S R. Economic as well as scientific progress has been fantastic; for example in 1945 steel production was 11·2 million tons, but by the end of the post-war Five Year Plan it had increased to 60 million tons, and there is a target of 91 million tons for 1966. Under the guidance of the present Soviet leader, Nikita Krushchev, Marx's militant doctrines are being rethought along the lines of 'peaceful co-existence' and serious differences are emerging between Russia and her poorer warmongering neighbour, China.